AppendixA. Supplementary material

File: `user-guide.pdf`

Figure A.15: User guide for *Nektar++* detailing compilation, installation, input format and usage, including examples.

File: `insitu.zip`

Figure A.16: *Nektar++* input files for simulating flow past a cylinder at $Re = 80$ using `IncNavierStokesSolver`. This example uses the HDF5 input format described in Section 3.1 and the in-situ processing facilities of Section 3.2 to generate an animation of the vorticity field and show the von Kármán vortex shedding in this regime.

File: `adaptiveOrder.zip`

Figure A.17: *Nektar++* input files for simulating flow over a NACA0012 wing at $Re = 50{,}000$ using `IncNavierStokesSolver`. This example uses an adaptive-in-time polynomial order described in Section 4.2 to increase efficiency of the simulation when compared to a spatially-constant polynomial order.

File: `wavyWing.zip`

Figure A.18: *Nektar++* input files for simulating flow over a wavy NACA0012 wing at $Re = 1{,}000$ using `IncNavierStokesSolver`. This example uses the mapping technique described in Section 4.3 to perform simulations in a quasi-3D setting.

File: `acoustic.zip`

Figure A.19: *Nektar++* input files for simulating the spinning vortex pair using the `AcousticSolver` of Section 5.2 at a polynomial order of $P = 5$, accelerated using the `Collections` library described in Section 3.3.

File: `meshGen.zip`

Figure A.20: *NekMesh* input files for a NACA0012 aerofoil section and T106C turbine blade geometry outlined in Section 5.1.

File: `vivCylFlow.zip`

Figure A.21: *Nektar++* input files for simulating flow over a flexible cylinder $Re = 3{,}900$ using the `IncNavierStokesSolver`. This example uses the the thick strip model outlined in Section 5.3 to reduce computational cost against a full 3D simulation.

File: `shockBL.zip`

Figure A.22: *Nektar++* input files for simulating a shock boundary-layer interaction test case, at a Reynolds number $Re = 10^5$, Mach number $Ma = 2.15$ and shock angle $\beta = 30.8°$ as outlined in Section 5.4.